

THE INVENTION CLAIMED IS

1. An apparatus for filtering particles from a fluid, comprising:
a fluid inlet,
a fluid outlet,
a variable size passage between said fluid inlet and said fluid outlet, and
means for adjusting the size of said variable size passage for filtering said particles from said fluid.
2. The apparatus for filtering particles from a fluid of claim 1 wherein said means for adjusting the size of said variable size passage is a piezo-electric stack.
3. The apparatus for filtering particles from a fluid of claim 2 including a strain gauge operatively connected to said piezo-electric stack.
4. The apparatus for filtering particles from a fluid of claim 2 including a set screw operatively connected to said piezo-electric stack.
5. The apparatus for filtering particles from a fluid of claim 1 including a window operatively connected to said variable size passage.
6. The apparatus for filtering particles from a fluid of claim 5 wherein said window is a sapphire window.
7. The apparatus for filtering particles from a fluid of claim 1 wherein said particles are from 1 micron to 500 microns in size.
8. The apparatus for filtering particles from a fluid of claim 1 wherein said particles are beads.
9. The apparatus for filtering particles from a fluid of claim 8 wherein said beads include optically labeled tags.

10. The apparatus for filtering particles from a fluid of claim 8 wherein said beads include surfaces and antibody/antigen reactions on said bead surfaces.

11. A method of filtering particles from a fluid, comprising the steps of:
introducing an inlet fluid flow stream to a fixture with a variable size passage, and

setting said size of said variable size passage so that said fluid passes through said variable size passage but said particles do not pass through said variable size passage.

12. The method of filtering particles from a fluid of claim 11 wherein said step of setting said size of said variable size passage is accomplished using a piezo-electric stack.

13. The method of filtering particles from a fluid of claim 11 wherein said step of setting said size of said variable size passage is accomplished using a piezo-electric stack and a strain gauge operatively connected to said piezo-electric stack.

14. The method of filtering particles from a fluid of claim 11 wherein said step of setting said size of said variable size passage is accomplished using a piezo-electric stack and a set screw operatively connected to said piezo-electric stack.

15. The method of filtering particles from a fluid of claim 11 wherein said step of setting said size of said variable size passage is accomplished using a piezo-electric stack and a window operatively connected to said variable size passage.

16. The method of filtering particles from a fluid of claim 11 wherein said particles are from 1 micron to 500 microns in size.

17. The method of filtering particles from a fluid of claim 11 wherein said particles are beads.

18. The method of filtering particles from a fluid of claim 11 wherein said particles are beads and including the step of attaching optically labeled tags to said beads.

19. The method of filtering particles from a fluid of claim 11 wherein said particles are beads and including the step of attaching antibody/antigen reactions to said beads.

20. The method of filtering particles from a fluid of claim 11 including the step of eluting said particles using an outlet flow stream.

21. The method of filtering particles from a fluid of claim 11 wherein said particles are beads and including the step of capturing said beads using an outlet flow stream.